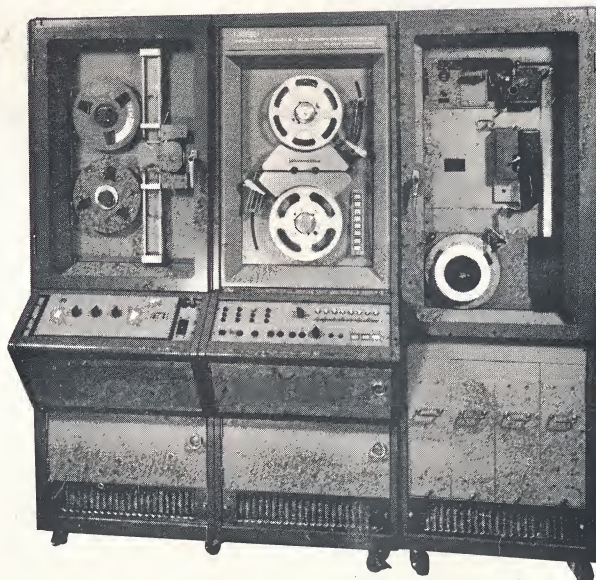
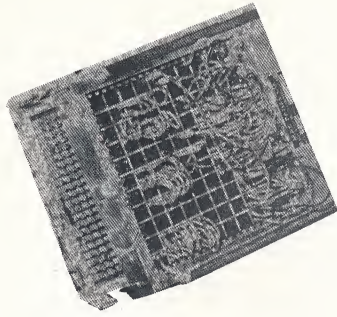


SC-332A High Speed Bi-Directional Data Converter



\$80,000
to
\$100,000



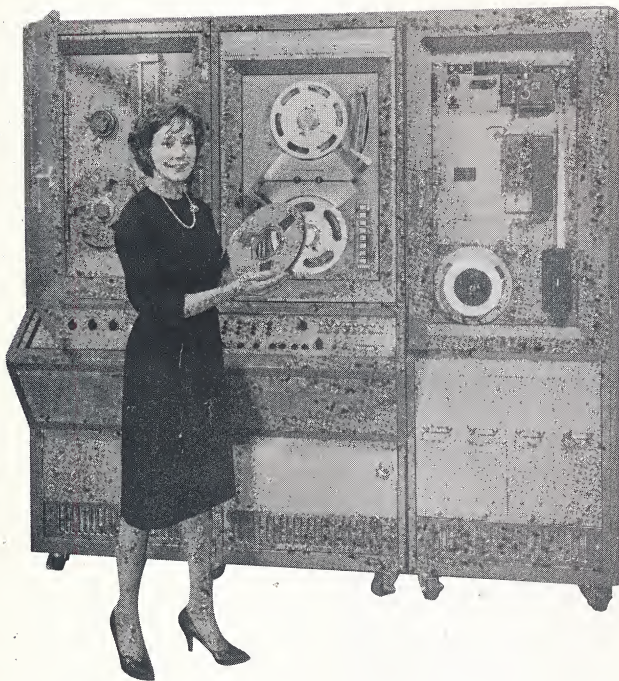


SC-332 A High Speed Bi-Direct

MAGNETIC TAPE ◀ ◀ ◀ ◀ ◀

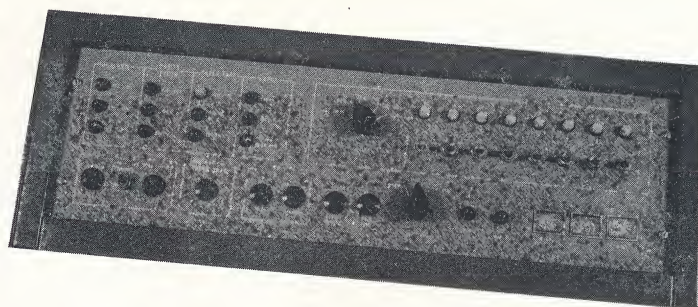
Versatility is the Keynote with the SC-332A Converter

For example:



- Universal, patchboard controlled, code conversion
- Modes of operation include:
 - Paper Tape to Magnetic Tape
 - Magnetic Tape to Paper Tape
 - Paper Tape to Paper Tape
- Paper Tape punch speeds up to 280 characters/second average
- Paper Tape reading speeds of 550 characters/second or 900 characters/second (8-inch reel) average
- Choice of 200, 556, or 800 bit/inch input-output magnetic tape densities (selectable via patchboard)
- Record length selection through patchboard programming
- Ability to add or delete special characters during code conversion
- Single pass read-after-punch paper tape punch verification

ctional Data Converter



▶ ▶ ▶ ▶ ▶ PAPER TAPE

APPLICATIONS

Numerically Controlled Machine Tools

The SC-332A has successfully demonstrated its applicability in the translation of data on magnetic tape to the paper tape used with numerically controlled machine tools, where the highest possible degree of accuracy is required. The SC-332A's ability to duplicate paper tapes has also proven useful in this application.

Data Handling Systems

For centralized data processing systems, the SC-332A can be used to translate data received from remote locations, on punched paper tape, to magnetic tape for immediate use in the computer.

Business Machines

The SC-332A can accept any punched paper tape from any peripheral data collection equipment and will also translate the data to magnetic tape for direct use in a computer.

SPECIFICATIONS

Operational Modes

Magnetic tape to paper tape

Paper tape to magnetic tape

Paper tape to paper tape

When operating in one of these three modes, the SC-332A will:

- Translate any input code to any output code.
- Add selected characters to output data, which are not present in input data.
- Delete selected characters of input data.
- Check parity of input tape.
- Generate parity for output tape.
- Check for errors which may be generated within the logic of the converter.
- Check punched tape output by means of a read-after-punch operation.
- Check the magnetic tape output by means of a read-after-write operation.
- Halt the conversion in event of an error or programmed halt (i.e., Read Error, Punch Error, End-of-File, Tape Break, Stop Code, etc.) and indicate the reason for the halt.

OPERATIONAL SPEEDS (Average)

MT-PT 280 characters/second
PT-MT 550 characters/second
PT-PT 280 characters/second
PT-MT 900 characters/second
(8" reel)

RECORD LENGTH

128 to 2,346 characters standard
Greater lengths by option

CIRCUITRY

Solid-state circuitry is used throughout the converter.

TAPE FORMATS

Magnetic Tape - any standard IBM format and other standard computer magnetic tape formats.

Paper Tape - 5, 6, 7, and 8-level codes with or without parity.

PARITY CHECK

Magnetic Tape - odd or even vertical parity and even longitudinal parity.

Paper Tape - odd or even parity.

TAPE PERFORATOR

The single pass punch-verify system operates with any 11/16, 7/8, or 1-inch tape meeting the requirements of NAS943. Printer punch is also available.

MAGNETIC TAPE TRANSPORT

Utilizes air columns for tape tensioning.
Operates at 30 inches per second.
Provides read-after-write error detection.

INPUT PERFORATED TAPE READER

Utilizes sprocketless tape drive and photo-electric reading.

Operates at 600 characters/second with any 11/16, 7/8, or 1-inch tape meeting the requirements of NAS943 (1000 characters/second with 8-inch reel).

POWER

120 volts 10%, 60 cps 5%, single phase at 3 kw

Power factor: 0.85

DIMENSIONS

Height - 76-7/8 inches

Width - 78-1/2 inches

Depth - 25-1/2 inches

WEIGHT

Approximately 1700 pounds

TEMPERATURE RANGE

50°F - 100°F operating

for further information, contact:

PRODUCT MANAGER - DATA EQUIPMENT

GENERAL DYNAMICS | ELECTRONICS

1400 N. Goodman St., P.O. Box 226, Rochester, N.Y. 14601

TWX NO. 716-235-6049

PHONE 716-342-8000



GENERAL DYNAMICS | ELECTRONICS

7 January 1965

Mr. T. Nelson
Systems Consultant
Box 1546
Poughkeepsie, New York

Subject: SC-332 Data Converters

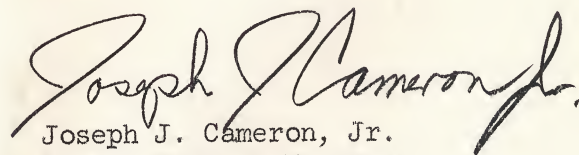
Gentlemen:

Thank you for your recent inquiry regarding the SC-332A Bi-Directional Data Converter. This equipment offers self-contained, off-line conversion between Punched Paper Tape and Magnetic Tape.

I am pleased to enclose literature describing this device and the SC-332B Paper Tape to Magnetic Tape converter.

We would appreciate the opportunity to discuss this equipment with you further at your convenience, and suggest a converter to meet your specific requirements. Please do not hesitate to contact Mr. W. P. Tuck, Product Manager, Data Equipment, or me.

Very truly yours,



Joseph J. Cameron, Jr.
Deputy Product Manager
Data Equipment

JJC/DMT

Enclosure

SAMPLE SPECIFICATION
FOR A
BI-DIRECTIONAL MAGNETIC TAPE
TO
PUNCHED PAPER TAPE CONVERTER

Model SC-332A

GENERAL DYNAMICS/ELECTRONICS
Rochester, New York

1. SCOPE

This specification describes the fabrication, performance and acceptance data on the SC-332 Bi-Directional Tape Converter.

2. REQUIREMENTS

2.1 General

This system shall perform data conversion from perforated tape to digital magnetic tape or perforated tape, and from digital magnetic tape to perforated tape. The converter shall, when operating in one of these three modes, perform the following operations:

- (a) Translate any input code to any output code.
- (b) Delete selected characters of input data.
- (c) Add selected characters to output data, which are not present in input data.
- (d) Check parity of input tape.
- (e) Generate parity for output tape.
- (f) Check for errors which may be generated within the logic of the converter.
- (g) Check punched tape output by means of a read-after-write operation.
- (h) Check the magnetic tape output by means of a read-after-write operation.
- (i) Halt the conversion in event of an error or programmed halt. (i.e. Read Error, Punch Error, End-Of-File, Tape Break, Stop Code, Etc.) and indicate the reason for the halt.

2.2 Design

2.2.1 Circuitry

Solid state circuitry shall be used throughout the converter with the exception of the tape transports.

2.2.2 Construction

The converter shall be of modular construction and shall be housed in three vertical caster mounted racks. The floor loading shall not exceed 100 lbs per sq. foot. Manual operating controls and input/output

devices shall be located between three and six feet of the floor.

2.2.3 Environment

The converter shall perform according to this specification when operating at any ambient temperature from 50°F to 100°F and relative humidity from 20% to 80%.

2.2.4 Power

The converter shall operate from unregulated 120 $\pm$ 6 volts, 60 cycle single phase power. Maximum dissipation is approximately 3000 watts.

2.2.5 Tape Perforator

Three types of tape punch/verify systems are offered.

- (a) Soroban LP-2 150 character per second punch.
- (b) Soroban GP-2 300 character per second punch.
- (c) Soroban PT-1 100 character per second strip printer punch.

The punch verify system shall operate with any 11/16, 7/8 or 1 inch tape which meets the requirement of NAS 943.

2.2.6 Magnetic Tape Transport

The magnetic tape transport shall utilize air columns for tape tensioning. It shall operate at 30 ips and provide for read-after-write error detection.

Tape formats for which operation may be supplied are:

- (a) IBM 729 II, IV (200 or 556 bits/inch)
- (b) IBM 729 V & VI (556 or 800 bits/inch)
- (c) Other standard computer magnetic tape formats.

2.2.7 Perforated Tape Reader

The input paper tape reader shall utilize sprocketless tape drive and photo electric reading. Two combinations are offered.

- (a) Reading speed of 600 characters per second with 10 1/2 inch N.A.B. reels.

- (b) Reading speed of 400 characters per second with 8 inch N.A.B. reels.

The reader shall operate with 11/16, 7/8, and 1 inch tape. Dry and oiled paper, Mylar-aluminum and Paper-Mylar tapes which meet the requirements of NAS 943 shall be accepted.

2.2.8 Memory Capacity

The converter can be supplied with any desired memory capacity; however, some suggested provisions are:

- (a) The memory capacity of the converter shall be a minimum of 128 seven bit characters.
- (b) The memory capacity of the converter shall be a minimum of 512 seven bit characters.
- (c) The memory capacity of the converter shall be a minimum of 1024 seven bit characters.
- (d) The memory capacity of the converter shall be a minimum of 2346 seven bit characters.

3. PERFORMANCE

3.1 Perforated Tape to Magnetic Tape

3.1.1 Input Tape Code

The input perforated tape will be 5, 6, 7, or 8 level and may be of any coding.

3.1.2 Output Magnetic Tape Code

The recording specification including tape reel, file protection and data format shall be compatible with the specified computer. (See 2.2.6)

3.1.3 Code Translation and Editing

3.1.3.1 Code Translation

The converter shall translate from any six or fewer level

code (not including parity level) to any other six or fewer level code under control of a programmed patch board.

3.1.3.1.1 Seven or Eight Level Input Code

- (a) When a seven or eight level input code is used, one level will be a parity channel and for eight level codes, one will be an end-of-line channel (except for special conversion as noted below).
- (b) For special seven and eight level codes, patch board wiring is provided such that one input character may be distributed between two consecutive magnetic tape output characters.

3.1.3.2 Editing

3.1.3.2.1 Character Deletion

Plugboard wiring shall be provided such that specific input characters (up to four) may be deleted during the conversion.

3.1.3.2.2 Record Length

The record length of the output magnetic tape shall be selected by plugboard wiring and shall be limited only by the memory capacity. (See 2.2.8).

Fixed record lengths shall be recorded on the output magnetic tape under the control of the plugboard wiring. An input character may be selected to block the input data and the remainder of the record filled-out with a plugboard selectable character.

3.1.3.2.3 File and End-Of-Job

End-Of-File and End-Of-Job shall be generated on the output magnetic tape under the control of plugboard

selectable input characters and manual controls.

3.1.4 Input Error Detection

Upon detection of an input parity error, the converter shall

(Plugboard controlled):

(a) Halt before the next character is read and display the character in error.

(b) Insert a preselected error character and continue.

3.1.5 Inventory Check

An inventory check shall be performed by the converter to insure that each input character has been accounted for in the conversion process.

3.1.6 Internal Error Detection

Parity circuits shall be provided to detect errors which would occur in the logic of the converter or memory.

3.1.7 Read After Write Check

All data recorded on magnetic tape shall be checked for correct character parity and correct LRCC with a separate read head placed after the write head. Data shall be recirculated in memory such that the record-in-error may be re-recorded after back spacing the magnetic tape.

3.2 Magnetic Tape to Perforated Tape

3.2.1 Output Perforated Tape

Same as 3.1.1

3.2.2 Input Magnetic Tape

Same as 3.1.2

3.2.3 Code Translation and Editing

3.2.3.1 Code Translation

The converter shall provide completely flexible translation from any six or fewer (not including parity level to any

output code, six level or as specified in 3.1.3.1.1.

3.2.3.2 Editing

The character deletion functions shall be available as specified in 3.1.4.1. In addition, preselected characters may be inserted under plugboard control.

3.2.4 Error Detection

3.2.4.1 Input Error

Each character read from magnetic tape shall be checked for proper parity (odd or even as selected by plugboard) and correct LRCC. In the event that an error is detected, the record-in-error shall be re-read. If an error is detected in the re-read, the conversion will halt and an indicator illuminated.

3.2.4.2 Internal Error

The inventory check and converter logic parity check shall be operative in this mode.

3.2.4.3 Read-After-Punch Check

The output perforated tape shall be read after perforating and compared bit-by-bit with data in a buffer memory. The buffer memory shall contain the data which was used in perforating. An error shall cause the conversion to halt. A display of the found-in-error character and the buffer memory output character shall be available.

3.3 Perforated Tape to Perforated Tape

This mode shall operate as specified under perforated tape input and perforated tape output in sections 3.1 and 3.2.

3.4 Operating Controls

All operating controls and indications shall be located on front panels and

shall be conveniently grouped for operator use.

3.4.1 The following controls shall be provided:

- (a) Power On/Off
- (b) Reset (Reset all logic)
- (c) Start (Start conversion)
- (d) Halt (Stop at end of next record)
- (e) Record/File (Select process one record or one file)
- (f) Backspace (Backspace magnetic tape one record)
- (g) Tape Mark (Write a Tape mark)
- (h) File Gap (Generate End-Of-File gap on magnetic tape)
- (i) Record Gap (Generate End-Of-Record gap on magnetic tape)
- (j) Skip (Skip forward one file and halt)
- (k) Character correction switches

3.4.2 The following indicators shall be provided:

- (a) Power On
- (b) Ready (Converter ready to process data)
- (c) Start (Conversion in process)
- (d) Stop (Conversion in process)
- (e) MT (Alarm)
- (f) PT (Alarm)
- (g) Punch (Alarm)
- (h) I/O Ready
- (i) EOC (End -Of-Conversion)
- (j) MT Parity Error
- (k) PT Parity Error
- (l) Buffer Parity Error
- (m) Punch Error
- (n) Inventory Error
- (o) Sprocket Rip

(p) End Tape

(q) Low Tape